

## CLAIMS

What is claimed is:

1. A system for sputter coating a film of material onto a substrate, comprising:

a) an array including first and second unbalanced magnetrons having the same north and south magnetic polarities and being arranged in mirror configuration defining a space for receiving said substrate therebetween such that like poles are opposed without magnetic coupling between said magnetrons in said array, each of said magnetrons including an electrode target formed of said material; and

b) an alternating current and voltage power source electrically connected to said first and second electrode targets for alternately energizing said targets as cathodes and anodes.

2. A system in accordance with Claim 1 wherein each of said magnetrons has both north and south polepieces, and wherein said north pole pieces have a larger magnetic cross-section than said south pole pieces.

3. A system in accordance with Claim 1 wherein each of said magnetrons has both north and south polepieces, and wherein said south pole pieces have a larger magnetic cross-section than said north pole pieces.

4. A system in accordance with Claim 1 wherein the frequency of said alternation is a radio frequency.

5. A system in accordance with Claim 1 further comprising a reactive gas for reacting with said target material during sputtering thereof to form a compound of said target material and said gas on said substrate.

6. A system in accordance with Claim 1 wherein said first and second unbalanced magnetrons are planar magnetrons.

7. A system in accordance with Claim 1 wherein said first and second unbalanced magnetrons are cylindrical magnetrons.